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A NEW SPECIES OF *POA* L. (POACEAE) FROM BAJA CALIFORNIA, MEXICO

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Abstract

A new perennial grass species, **Poa bajaensis,** is described from Baja California, Mexico. It is compared to *P. strictiramea* Hitchc, and the type of *P. orcuttiana* Vasey. The species has long been known by the latter name in herbaria. It may be distinguished from these by its short upper leaf blades, more closed sheaths, and abaxially smoother leaves and smoother panicle branches. It is endemic and fairly frequent in the upper elevations of the Sierra San Pedro Mártir. The new species is tentatively considered to be related to *P. strictiramea,* and to be near to *P.* sect. *Homalopoa* Dumort.

Resumen

Se discribe una nueva graminea perenne, *Poa bajaensis,* de Baja California, Mexico. Se compara con *P. strictiramea* Hitchc. y el tipo de *P. orcuttiana* Vasey. Este especies, por mucha tiempo se denominó *P. orcuttiana* en los herbarios. Se puede distinguir de las otras dos, por las cortas hojas de caulinares de la parte superior, por las vainas mas cercanas, y por las hojas abaxialmente mas lisas y las ramas de paniculas mas lisas. Es aparantemente endemica, y mas o menos frequente en las elevacíones superiores de da Sierra San Pedro Mártir. La nueva especie tentativemente esta relacionada con *P. strictiramea,* y parece estar cercana a *P.* sect. *Homalpoa* Dumort.

A new and distinctive species of *Poa* is here named after the Baja California Peninsula of Mexico. The new species is known only from the upper elevations of the Sierra San Pedro Mártir. It has been collected there in the spring on several occasions, and seems to be fairly frequent. Specimens included here were treated as *P. orcuttiana* Vasey by Gould and Moran (1981), and have since passed under that name. So far as I am aware, J. D. Olmsted, in 1962, was the first person to collect the new species. I realized it was probably new when I first examined a specimen of it while working on my dissertation at New Mexico State University in the early 1980s, but needed to see more material and to compare it with the type specimen of *P. orcuttiana.*

Poa bajaensis Soreng, sp. nov. (Fig. 1)—TYPE: Mexico, Baja California, Sierra San Pedro Mártir, east rim above Yerba Buena, 31°01′N, 115°26′W, elev. 2700 m, common in duff under trees, 1 Jun 1968, *Reid Moran 15070* (Holotype, US-259736; isotype: SD-69304).

A *Poa strictiramea* similis sed in paniculis 4–13 cm longis (versus 10–30 cm) foliorum vaginis nodorum superiorum connatis 29–36% (versus 10% vel minor) laminis nodorum superiorum abbreviatis, 0.1–1.5(4) cm longis multo brevioribus quam vaginis (versus plerumque longioribus) laminis abaxialiter laevibus (versus plerumque scabris) differt.

Perennial, densely tufted, without rhizomes. Basal tuft of leaves 5–10(15) cm tall. Basal sheaths often persisting into the next growth season, papery (not anastomosing). New vegetative shoots emerging intravaginally; prophylls 1–2 cm long, split abaxially, scabrous and pilose on the 2 keels. *Culms* 20–50 cm tall, top 1–2 leaf nodes well exposed or barely enclosed, all lower nodes enclosed in their sheaths. *Leaves:* sheaths slightly keeled, very sparsely to moderately (rarely densely), evenly, finely scabrous, uppermost culm sheaths 8–15 cm, margins fused 29–36% of the length; collars not noticeably more scabrous than their sheaths; ligules of vegetative and lower culm leaves membranous, 0.25–0.5 mm, of upper culm leaves 0.5–1.5(2) mm, apex truncate to obtuse, backs and apical margins densely scabrous; culm and vegetative leaf-blades similar, flat or folded, moderately thick, with involute margins, abaxially smooth or very sparsely and finely scabrous, to moderately scabrous apically, veins weakly expressed adaxially and abaxially, adaxially smooth or moderately to densely finely scabrous, longest blades less than 5 cm, uppermost culm blade 0.1–1.5(4) cm, blades 1.5–2.75 mm wide (expanded), narrowly and abruptly prow-tipped. *Panicles* 4–13 cm, not or slightly to highly anthocyanic, erect, open, sparse, lower axis smooth, lowest internodes 1.8–3.9(5.2) cm; branches 2–3(5) per lower node, widely spreading to reflexed, fairly strict, smooth or very sparsely finely scabrous proximally, smooth or moderately (rarely densely) finely scabrous distally, terete or weakly angled, hooks not confined to rows on angles, the longest branches 3–7 cm, with 5–15 spikelets. *Spikelets* 3.75–8 mm; glumes and lemmas distinctly keeled, glumes thin, smooth or sparsely scabrous on the upper keel

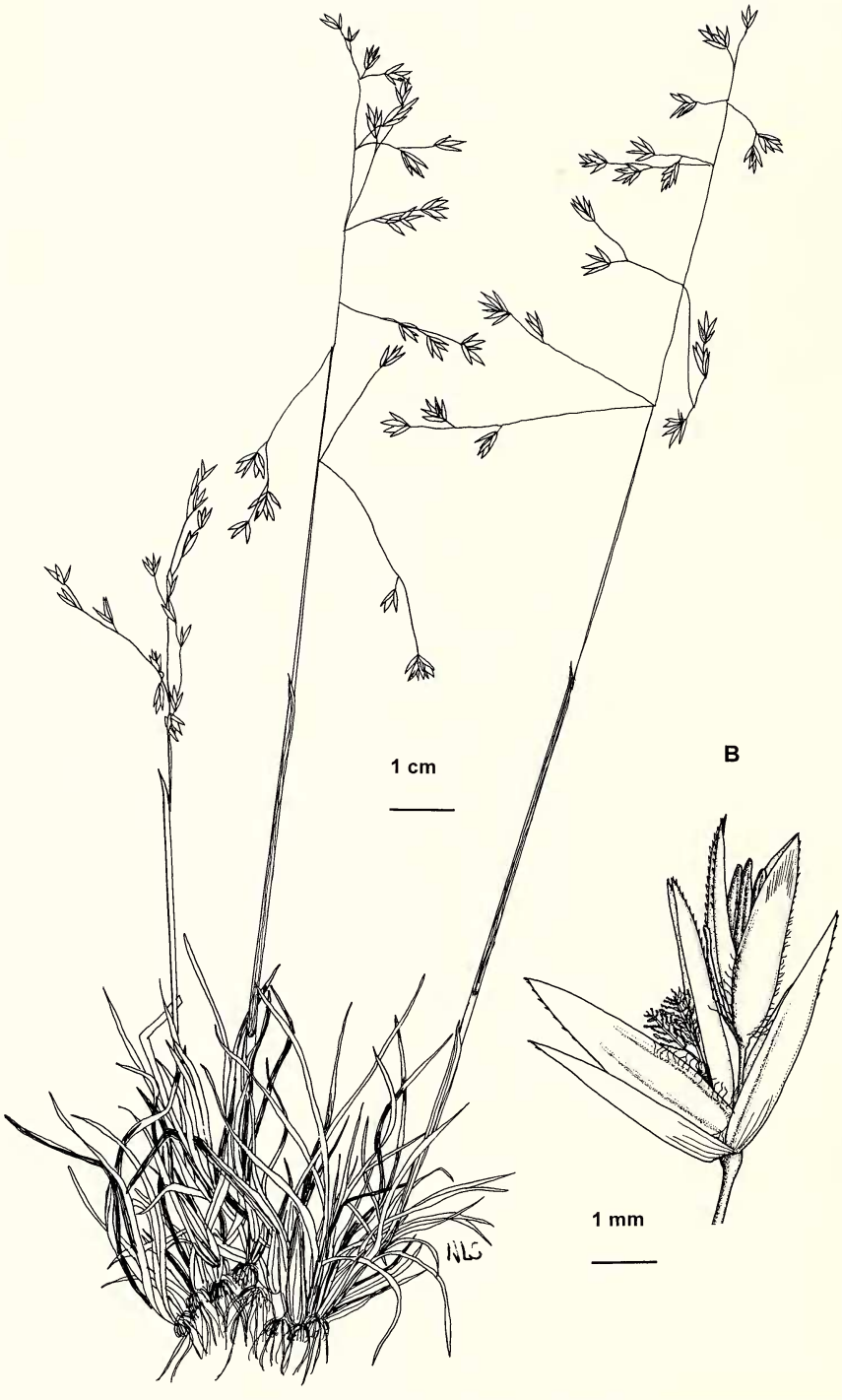

FIG. 1. *Poa bajaensis* Soreng, illustrated from the holotype collection, *Reid Moran 15070* (US-259736). A. Habit. B. Spikelet.

and sometimes on the lateral veins, and sometimes between them, ½ to ¾ the length of adjacent lemmas, the first 2.5–3 mm, 1(–3)veined, the second 2.8–3.5 mm, 3-veined, more than two times as wide as the first; rachillas smooth, longest internodes 1.25–2 mm; florets (1)2–4(6); calluses of some plants all glabrous, of other plants infrequently to frequently with 1–several woolly dorsal hairs up to 2 mm long; lemmas 3.2–4.2 mm, 5-veined, distinctly keeled, apically sparsely scabrous on the

keel, lateral veins weakly expressed, the body and other veins smooth, entirely glabrous in one plant, or softly puberulent, hairs to 0.5 mm on the keel and marginal veins, to 0.2 mm on the sides between the veins and sparsely to densely covering the lower ½–4/5, apex acute, entire; palea approximately equaling the lemma in length, keels nearly smooth to closely and finely scabrous, glabrous or sparsely puberulent near the middle on and between the keels. *Flowers* perfect; anthers 1.7–3.2 mm (rarely sterile, but then ca. 1.7–1.8 mm).

Paratypes. Mexico, Baja California [Norte]: Sierra San Pedro Mártir: Crest of range N of observatory, head of Cañada el Copal and S slope of Cero Venado Blanco, 2500–2700 m, 3 Jun 1988, *S. Boyd, T. Ross, K. McCulloh 2311* (RSA); La Concepcíon, 31°01′N–115°37′W, ca. 1450 m, 31 May 1968, *Reid Moran 15006* (SD); open W slope of Cerro 2828, ca. 31°02′N–115°27′W, ca. 2800 m, 31 May 1968, *Reid Moran 15060* (BH, SD); 2 mi W of Vallecitos, 31°00′N–115°29′W, ca. 2250 m, 2 Jun 1968, *Reid Moran 15083* (SD); 3 km NE of El Alto de Corona, 31°00′N–115°41′W, ca. 2400 m, 20 Aug 1977, *Reid Moran 24555* (SD); W slope below summit of El Picacho, 30°59′30″N–115°22′30″W, ca. 2950 m, 5 May 1978, *Reid Moran 25611* (SD); end of road into high end of northern sierra, ca. 64 mi. from end of paved road to Ensenada, 7200 ft (2210 m), 6 Jun 1962, *J. D. Olmsted 4561* (RSA; somewhat intermediate to *P. secunda*); Central [region], ca. 3 mi. ESE of Prado del Corona, ca. 1 mi. up canyon from southernmost aspen colony, tributary of Rio San Rafael, 8100 ft (2490 m), 9 Jun 1962, *J. D. Olmsted 4711* (RSA); S of Vallecitos near Cerro la Botella Azul, 30°57′20″N–115°25′26″W, ca 2440 m, 27 Jun 1998, *J. Rebman & A. Russell 5384* (US); near crest of mountain range, approx. 2 mi SE of the observatory, 31°14′N–115°64′W, ca. 2985 m, 28 Jun 1998, *J. Rebman & A. Russell 5384* (SD); "Corral Meadow", 7.5 km NW (340°) of the observatory, 31°06′45″N–115°29′50″W, 16 Jun 1988, *A. C. Sanders, R. Minnich, E. Franco M. Salazar 7895* (RSA, SD); Vallecitos, ca. 31°02′N–115°28′W, ca. 2430 m, 18 Jun 1985, *R. F. Thorne, R. Dahlgren, S. Boyd & D. Charlton 60858* (RSA, SD); Vallecitos, ca. 31°02′N–115°27.5′W, ca. 2430 m, 1 Sep 1985, *R. F. Thorne, M. Z. Thorne, L. Thorne & T. Petrella 61394* (RSA); just above observatory living quarters, ca. 31°02′N–115°28′W, ca. 2600 m, 7 May 1986, *R. F. Thorne, T. S. Elias & Paulino Rojas 61967* (MO-3333160, RSA); near gate to UNAM Observatory, 31°02′N–115°29′30″W, 2520 m, 29 May 1982, *G. Yatskievych, S. Forbes, M. Gallagher, J. Evans & A. Kelley 82-190* (SD).

Habitat characteristics. Mountain slopes, flats and drainages, in Salix and Populus tremuloides thickets, *Quercus-Pinus jeffreyi* forests, and *Quercus-P. jeffreyi-P. lambertiana-Abies concolor* forests, and open meadows of *Pinus jeffreyi* park, in sandy to rocky to clayey, sometimes duff-covered, granitic soils, 1450–2950 m elev. Flowering May to June.

Discussion. Herbarium specimens of the new species had been determined as: *P. fendleriana* (Steud.) Vasey (*P.* sect. *Madropoa* Marsh ex Soreng); *P. interior* Rydb. (*P.* sect. *Stenopoa* Dumort.); or most commonly as *P. orcuttiana* Vasey (=*P. secunda* J. Presl subsp. *secunda; P.* sect. *Secundae* Marsh ex Soreng). Although it seems to have little in common with any of these taxa, it is superficially similar in a few respects to the type of *P. orcuttiana.*

Poa orcuttiana was placed in synonymy under *P. scabrella* Vasey by Hitchcock (1951) and Keck (1959), and (along with *P. scabrella*) in *P. secunda* J. Presl by Kellogg (1986). The type of *P. orcuttiana* is typical of material that has been recognized as *P. scabrella* (Hitchcock 1951; Keck 1959; Gould and Moran 1981). It fits well within the range of morphological variation found in *P. secunda* subsp. *secunda* in which *P. scabrella* is included by Soreng (1994; *P. orcuttiana* was considered a minor synonym of *P. scabrella sensu* Hitchcock or Keck, and thus was not included in the brief synonymy published there). However, Gould and Moran (1981) recognized both *P. scabrella* and *P. orcuttiana* in their treatment of grasses of Baja California, Mexico. Gould and Moran's description of *P. orcuttiana,* its habitat, range (except for the stated range in southern California), and key, match the new species perfectly. To clear up this contradiction it is necessary to compare the type of *P. orcuttiana* with the new species in detail.

The type specimen of *P. orcuttiana* Vasey (Holotype: USA, California, San Diego, Chollas [a site below 150 m elevation], 26 May 1884, *C. R. Orcutt 1070* (US-556833), West. Amer. Scientist 3: 165. 1887.), has long, narrow (0.5 mm), very thin, and sparsely to moderately densely and coarsely scabrous blades, the basal tuft 20 cm tall, upper culm blades 4.5–7 cm long (2/5 to ½ the length of their sheaths), with acute or lacerate ligules 2.75–3.25 mm long. The sheaths are open to near the base and are moderately densely, coarsely scabrous. The panicles are contracted, or, on one culm in anthesis (probably lending to past confusion with the new species), open with somewhat spreading branches. (It is usual for *P. secunda* panicles to open up at anthesis and later contract, though they remain open in some ecotypes of sheltered habitats.) The panicle branches are densely and coarsely scabrous throughout. The spikelets have 5–8 florets, with sparsely scabrous rachillas, first glumes with 3 veins, calluses glabrous or with a short crown of hairs surrounding the lemma base, and lemmas rounded on the back and quite scabrous, with short sparse pubescence mainly on the keel and marginal veins.

The new species differs in several respects from

TABLE 1. COMPARISON OF *POA BAJAENSIS* WITH *P. STRICTIRAMEA* AND THE TYPE OF *P. ORCUTTIANA*. Character states typical of the *P. scabrella* form of *P. secunda* subsp. *secunda* are indicated by *.

Characters	Species *P. bajaensis*	Type specimen *P. orcuttiana*	Species *P. strictiramea*
Culm length	20–50 cm	60–70 cm*	30–90 cm
Blade shape and thickness	flat or folded with involute margins, moderately thick	flat*, thin*	flat or folded with involute margins, moderately thick
Blade abaxial scabrosity	smooth or very sparse throughout to moderate apically, fine	sparse to moderately-dense*, coarse*	sparse to dense, coarse
Basal leaf tuft height	5–10 (–15) cm	20 cm*	15–30 cm
Leaf blade and sheath persistence	persisting	soon withering*	persisting
Top leaf blade length	0.1–1.5 (–4) cm	4.5–7 cm*	7–15 cm [complete data unavailable]
Top blade-to-sheath length ratio	< 1:5 (rarely more)	2:5–1:2*	mostly > 1:1
Top ligule length	0.5–1.5 (–2) mm	2.75–3.25 mm*	0.5–4 (–6) mm
Top ligule apex	truncate to obtuse	acute or lacerate*	truncate to acute
Sheath closure from base	29–36%	closed only near the base or up to 10%*	closed only near the base or up to 10%
Panicle length, shape, and branch angle of divergence	4–13 cm, open, branches widely spreading to reflexed	14 cm*, contracted*, branches ascending, or during anthesis open with branches somewhat spreading*	(7–) 10–30 cm, open, branches spreading
Panicle branch scabrosity	smooth or sparse proximally, smooth or moderate to dense distally, fine	dense* and coarse* throughout*	moderate to dense on the angles throughout, fine to coarse
Spikelet no. of florets	(1–) 2–4 (–6)	5–8*	2–5
Rachilla vestiture	smooth, glabrous	sparsely scabrous*, glabrous	smooth or scabrous, sometimes sparsely hirtellous
First glume no. of veins	1 (–3 faint)	3*	1–3
Callus pubescence	glabrous, or with a sparse dorsal web	glabrous, or with a crown of short hairs*	glabrous, rarely with a sparse dorsal web
Lemma shape	keeled	rounded on back*	keeled
Lemma scabrosity	smooth	distinctly scabrous*	smooth or sparsely to densely scabrous

the type of *P. orcuttiana* (Table 1). The scabrosity of the leaves is much finer, and sparse or absent on the abaxial surface and denser on the adaxial surface; the sheaths are closed over a greater portion of their length; the leaf-blades are shorter (the upper culm blades mostly less than 1/5 the length of their sheaths), broader, thicker, firmer, and flat or more often folded; and the ligules are shorter and truncate. The inflorescence remains open and the branches are widely spreading to reflexed and are smooth or only sparsely scabrous distally (moderately scabrous in ***Olmsted 4561,*** which also has a 4-cm-long upper blade [2/5 the sheath in length], sterile anthers, and is perhaps intermediate between *P. bajaensis* and *P. secunda*). The spikelets usually have fewer (2–4) florets; the first glumes are mostly 1-veined; the rachillas are smooth; the lemmas are keeled; and the calluses sometimes have a dorsal web (never a crown of hairs).

Poa scabrella, as treated by Keck (1959) and by Gould and Moran (1981), is said to occur mainly below 1500 m, and is not known to reach into higher elevations of the Sierra San Pedro Mártir. The new species occurs mainly above 2200 m.

The degree of closure of the sheaths, the smoothness of the branches, and the presence of 1-veined first glumes exclude this species from *P.* sect. *Stenopoa.* In addition, the keeled spikelets and lemmas and the occurrence of a dorsally isolated web on the callus exclude this species from *P.* sect. *Secundae.* There is no evidence of dicliny in *P. bajaensis,* eliminating the possibility it belongs to *P.* sect. *Madropoa, P.* sect. *Dioicopoa* E. Desv., or the *P. nervosa* complex of *P.* sect. *Homalopoa* Dumort., all of which exhibit pistillate flowers (with rudimentary anthers) in many plants (Soreng 2000).

The new species is most similar to *Poa strictiramea* Hitchc. (Table 1; syn. *P. involuta* Hitchc.) of the mountains in and around the Chihuahuan Desert and the eastern Sierra Madre Occidental. The nearest site I am aware of for the latter species is in northwest Chihuahua, near Babicora, over 850 km ESE. The new species is tentatively considered to be allied to *P. strictiramea* and its rhizomatous relative *P. ruprechtii* Peyr. of the Sierra Madre Oriental. It is placed *incertae sedis,* near to the latter two species, these near to *P.* sect. *Homalopoa* Dumort.

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